NEUROCOGNITION OF PATIENTS ON WHOLE BRAIN RADIOTHERAPY: A PROSPECTIVE STUDY

ABSTRACT

INTRODUCTION

The greatest fear with the application of WBRT is the fear of neurocognitive decline. The main component of this WBRT related cognitive decline is the immediate and delayed verbal memory. But the decline in performance is seen in various other neurocognitive and executive function.

Cognitive decline is said to be the main reason for poor quality of life. So we performed a prospective study on patients who were on WBRT and made an attempt to assess the correlation of WBRT on Neurocognition and quality of life.

AIMS AND OBJECTIVES

- To study the neurocognitive change that can occur due to whole brain radiotherapy.
- To measure the MMSE, MoCA, HVLT, and Trail making test scores of patients on WBRT.
- To study the quality of life of the whole brain radiotherapy patients using Katz ADL, LBADL and WHO QOL Bref scales.

METHODOLOGY

The study was conducted in Barnard institute of radiology, Madras Medical College. The abstract was presented before ethics committee and approval was obtained. The study was done from March 2017 to September 2017. Patients suffering from brain metastasis were chosen for study based on inclusion and exclusion criteria. A detailed informed consent was taken from the patient and then recruited for our study. Initially their IQ was measured with BKT. Later whole brain radiotherapy sessions were conducted and relevant data was collected for study. The relevant scales were applied thrice i.e. immediately after WBRT, 3 months and after 6 months. The collected data were analyzed using SPSS package and necessary results obtained.

Inclusion criteria

- Age 40 to 70
- Ability to give informed consent
- Karnofsky performance status >70.

Exclusion criteria

- Mental retardation (IQ< 70)
- Known major psychiatric illness
- Patients on chemotherapy
- Past therapeutic radiation exposure to brain

Neurocognitive assessment tools

1) Mini mental status examination
2) Montreal cognitive assessment test
3) Hopkins verbal learning test
4) Activity of Daily Living Scale
5) Binet Kamath Test
6) WHO QOL Bref

RESULTS

A total of 43 subjects were selected for the study. After the analysis we found that MMSE scores had dropped in 3 and 6 months and there was significant drop from 0 months to 6 months [p=0.000] and from 3months to 6 months [p=0.008].Montreal cognitive assessment also showed that there is cognitive decline during 6 months of radiotherapy. On applying the Katz ADL and Lawton body instruments of daily living we could find the ability of the patient to perform daily activities dropped after radiotherapy. Next we applied the WHO QOL Bref scale to measure the patient's quality of life in various domains and found a significant drop in scores over 6 months.

CONCLUSION

At the present neurocognitive decline is an important concern for the patients undergoing WBRT for brain metastasis and tumors. But until today no treatment has demonstrated better efficacy than WBRT in managing the brain metastasis. WBRT has given the best response in terms of palliation in brain metastasis with significantly good overall survival. Thus it has been widely used until today in spite of known side effects.